The non-kinking feature is made possible by a spiral-like wire with a straight length of similar wire as a "permanent stylet." The catheter wall is similar to the "armored" endotracheal tube in construction. The entire wire ends in a spring tip. The entire catheter is covered with a fluoropolymer coating with appropriate distance and tip markers common to other epidural catheters.

The catheter threads easily through thin-walled, 18-gauge Hustead needles, but this coating does seem to create a drag on the Hustead needle when the needle is removed.

We have had difficulty removing four of these catheters. All were inserted easily and taped in place in a fashion similar to other types of catheters we routinely use. As the Arrow catheter was gently pulled, a definite resistance was felt. Placing the patient in an extreme laterally flexed position allowed three of the four catheters to be removed without further incident. All three had a "fish-hook" shape on the end of the spring portion and probably were dragging on the spinous process (fig. 1).

The fourth catheter would not come out easily even with the patient markedly flexed. As more forceful pulling was produced, the catheter began to unravel. Finally, the unwound catheter was removed (fig. 2) intact. Examination of the catheter revealed the coating apparently caught on a roughened area of bone and proceeded to take the coils out of the catheter, producing a very long distal end of the catheter. This unraveling occurred approximately 6 cm from the distal catheter mark.

All of our catheters are removed in the OB recovery room by anesthesia personnel. We advise all people removing these catheters to have the patient in a lateral-flexed position so the lumbar curvature is maximal. If any unusual resistance is met, a slow, steady traction pressure should be utilized. A sudden jerking motion is apt to exaggerate a fish-hooking deformity and make removal difficult if not impossible.

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potential for inadvertent dural puncture. Accordingly, the tips of these three catheters in the bent position described would be more suitably indicated to resemble soft tipped "J" wires as used for external jugular vein catheterization.

5) The size of the nerves in the epidural space are much larger than the catheter and are in the dural sleeve. Therefore, there is minimum danger that the small openings of the helical tip will snag these nerves.1

Thank you for the opportunity to respond.

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Considerations in the Treatment of Causalgia

To the Editor:—After reading the article in your July issue by Szeinfeld et al.,1 we do not agree with the conclusion that a surgical lumbar sympathectomy was the appropriate approach to the treatment of the patient. The authors described three successful diagnostic sympathetic blocks that produced full pain relief. Did the authors use a trial placebo injection to test for a placebo response?

At one week post-injury, the suggestion of a surgical procedure to treat a potentially spontaneously resolving condition might seem very aggressive. Had the patient received an adequate trial of sympathetic blocks by local anesthetics? Bonica and others suggest a minimum trial of six sympathetic blocks for treatment of a causalgic syndrome.2-4 Another potential method of treatment (diagnostic as well as therapeutic) could be the use of long-acting local anesthetic via a catheter placed near the lumbar sympathetic chain or in the epidural space. The local anesthetic could be given for an extended period in hopes of resolving the dysfunctional hyper-sympathetic activity.

A neurolytic sympathetic block would seem to have been indicated also, for the following reasons. While the success rate of a neurolytic block done under fluoroscopy may not equal the quoted success rates noted by the authors for surgical lumbar sympathectomy, the causalgia may be a temporary condition that may resolve spontaneously. The neurolytic block may temporarily inhibit the sympathetic chain function (6 months–1 year), a period that may allow resolution of the causalgia. Yet, the block would not produce permanent interruption of sympathetic function to the lower extremity. If, at 6 months to a year, the causalgic symptoms recurred, then the patient might more appropriately be considered for a lumbar surgical sympathectomy or another neurolytic block.

Ultimately, one must consider the risks and benefits of each procedure (i.e., surgical vs. neurolytic block for lumbar sympathectomy). The authors failed to mention the approach used for surgery (anterior vs. posterior approach), and the method of anesthesia (local anesthesia vs. general anesthesia). The authors also failed to mention whether their blocks were performed under fluoroscopy. The use of fluoroscopy may increase the success rate of lumbar sympathetic blocks and decrease the complication rate of neurolytic lumbar sympathectomy.

In conclusion, a neurolytic block or a further trial of temporary lumbar sympathetic blocks with local anesthetics before suggesting surgical sympathectomy would have been our initial method of treatment given the case as described by the authors.

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